US 6,233,650

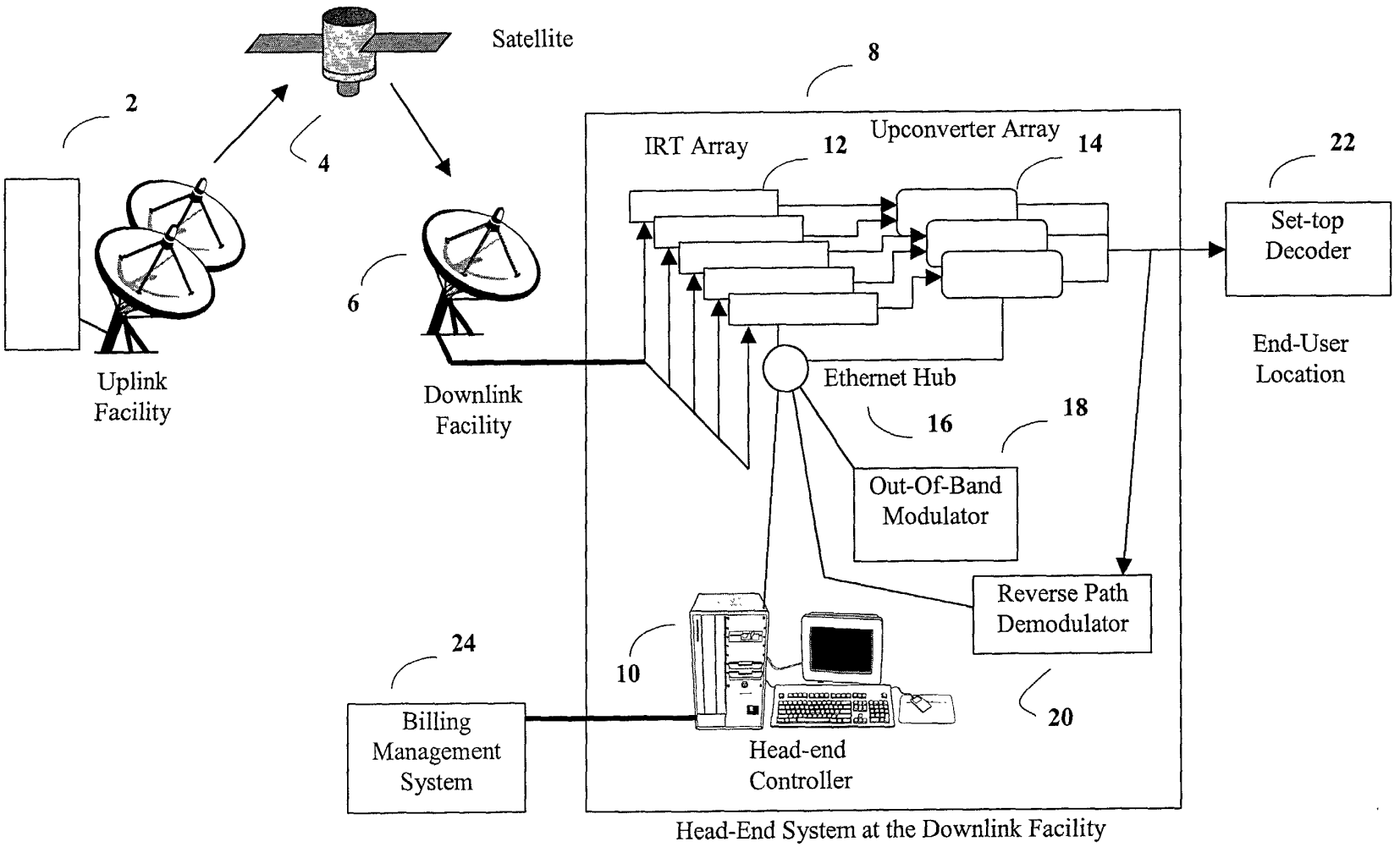

FIG. 1

Title SYSTEM AND METHODS FOR AUTOMATICALLY SELECTING, MAPPING AND DESIGNATING COMPONENTS FOR DIGITAL CABLE SERVICE DISTRIBUTION SYSTEMS
Inventor(s) R Booth
Docket No. GIC-631

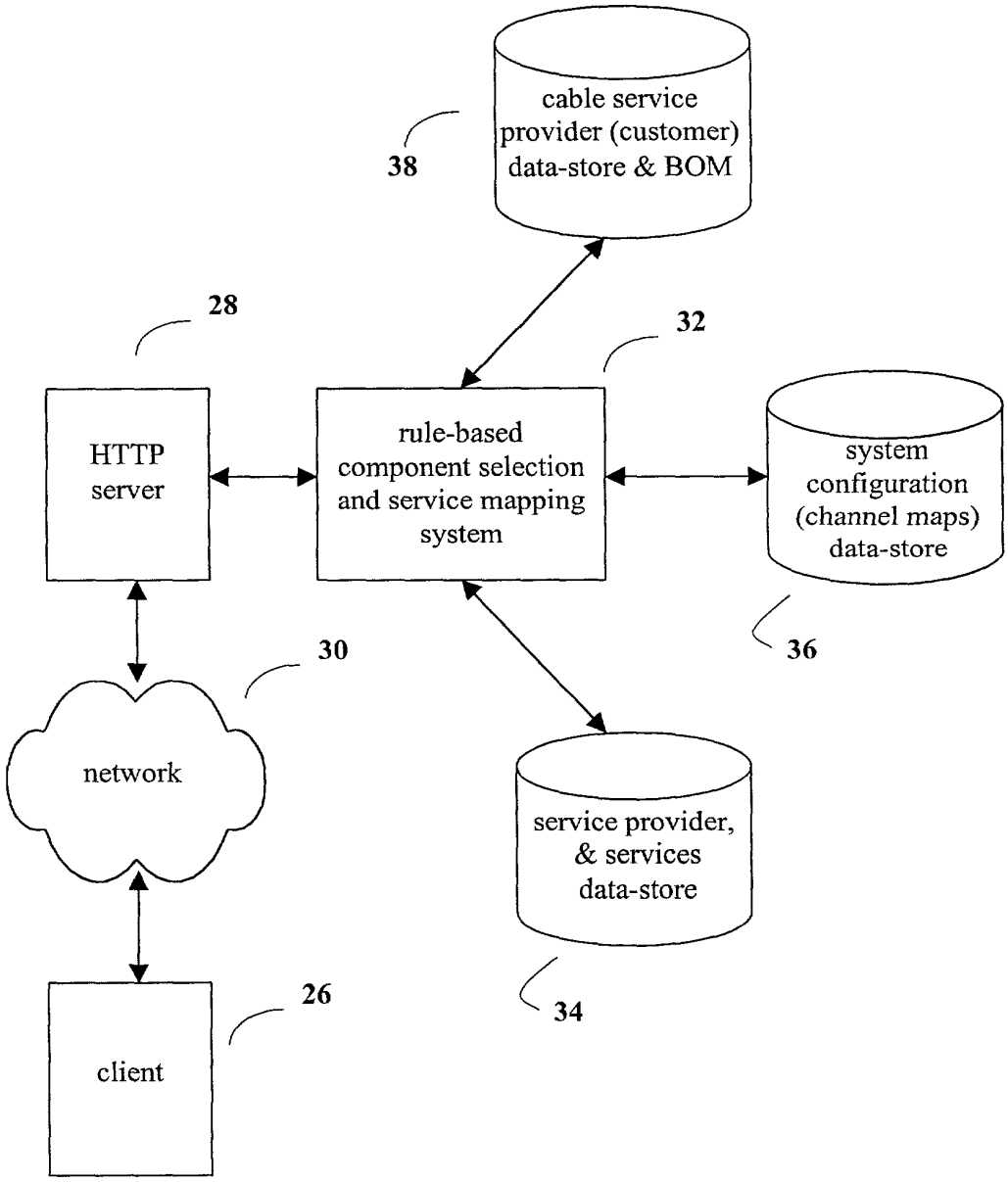
cable service provider (customer) data-store & BOM
38
28
32
HTTP server
rule-based component selection and service mapping system
system configuration (channel maps) data-store
36
30
network
service provider, & services data-store
34
26
client

FIG. 2

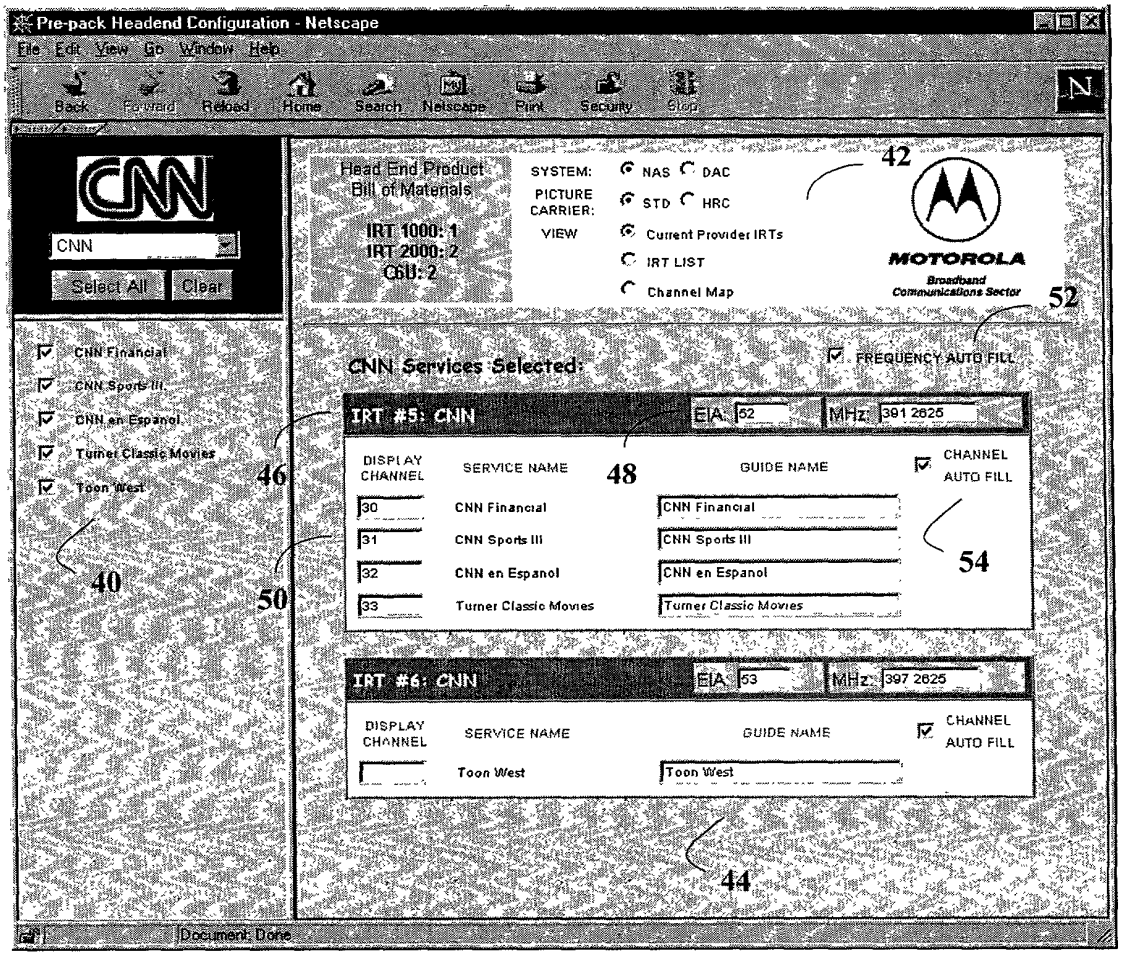
Pre-pack Headend Configuration - Netscape
File Edit View Go Window Help
Back Forward Reload Home Search Netscape Print Security Stop
CNN
CNN
Select All
Clear
CNN Financial
CNN Sports III
CNN en Espanol
Turner Classic Movies
Toon West
40
46
50
Head End Product
Bill of Materials
IRT 1000: 1
IRT 2000: 2
CGU: 2
SYSTEM: NAS DAC
PICTURE CARRIER: STD HRC
VIEW Current Provider IRTs
IRT LIST
Channel Map
42
MOTOROLA
Broadband Communications Sector
52
CNN Services Selected:
FREQUENCY AUTO FILL
IRT #5: CNN
EIA: 52
MHz: 391 2625
DISPLAY CHANNEL
SERVICE NAME
48
GUIDE NAME
CHANNEL AUTO FILL
30 CNN Financial CNN Financial
31 CNN Sports III CNN Sports III
32 CNN en Espanol CNN en Espanol
33 Turner Classic Movies Turner Classic Movies
54
IRT #6: CNN
EIA: 53
MHz: 397 2625
DISPLAY CHANNEL
SERVICE NAME
GUIDE NAME
CHANNEL AUTO FILL
Toon West Toon West
44
Document: Done

FIG. 3a

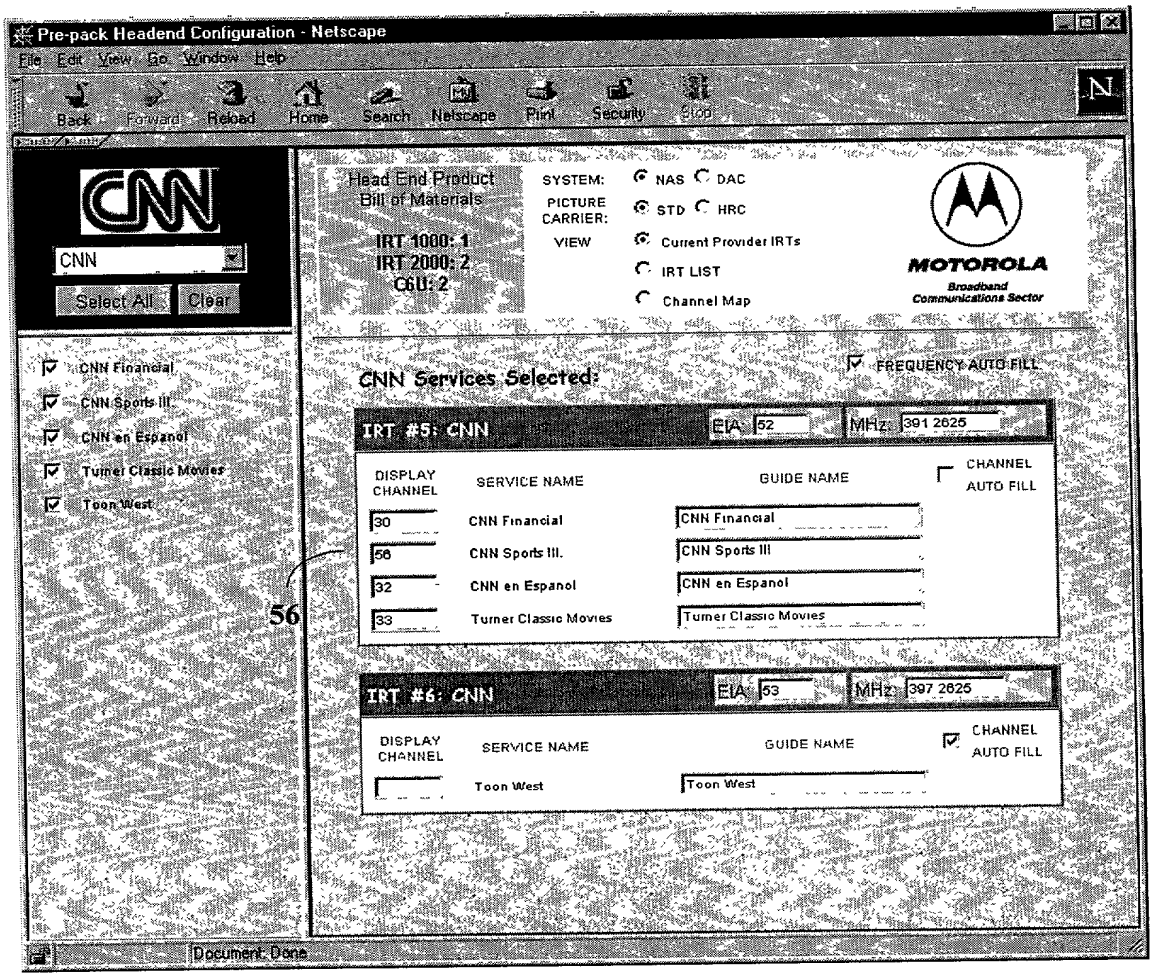
Pre-pack Headend Configuration - Netscape
File Edit View Go Window Help
Back Forward Reload Home Search Netscape Print Security Stop
CNN
CNN
Select All
Clear
CNN Financial
CNN Sports III
CNN en Espanol
Turner Classic Movies
Toon West
56
Head End Product Bill of Materials
IRT 1000: 1
IRT 2000: 2
C6U: 2
SYSTEM: NAS DAC
PICTURE CARRIER: STD HRC
VIEW Current Provider IRTs
IRT LIST
Channel Map
MOTOROLA
Broadband Communications Sector
CNN Services Selected:
FREQUENCY AUTO FILL
IRT #5: CNN
EIA: 52
MHz: 391 2625
DISPLAY CHANNEL
SERVICE NAME
GUIDE NAME
CHANNEL AUTO FILL
30 CNN Financial CNN Financial
58 CNN Sports III. CNN Sports III
32 CNN en Espanol CNN en Espanol
33 Turner Classic Movies Turner Classic Movies
IRT #6: CNN
EIA: 53
MHz: 397 2625
Toon West Toon West
Document: Done

FIG. 3b

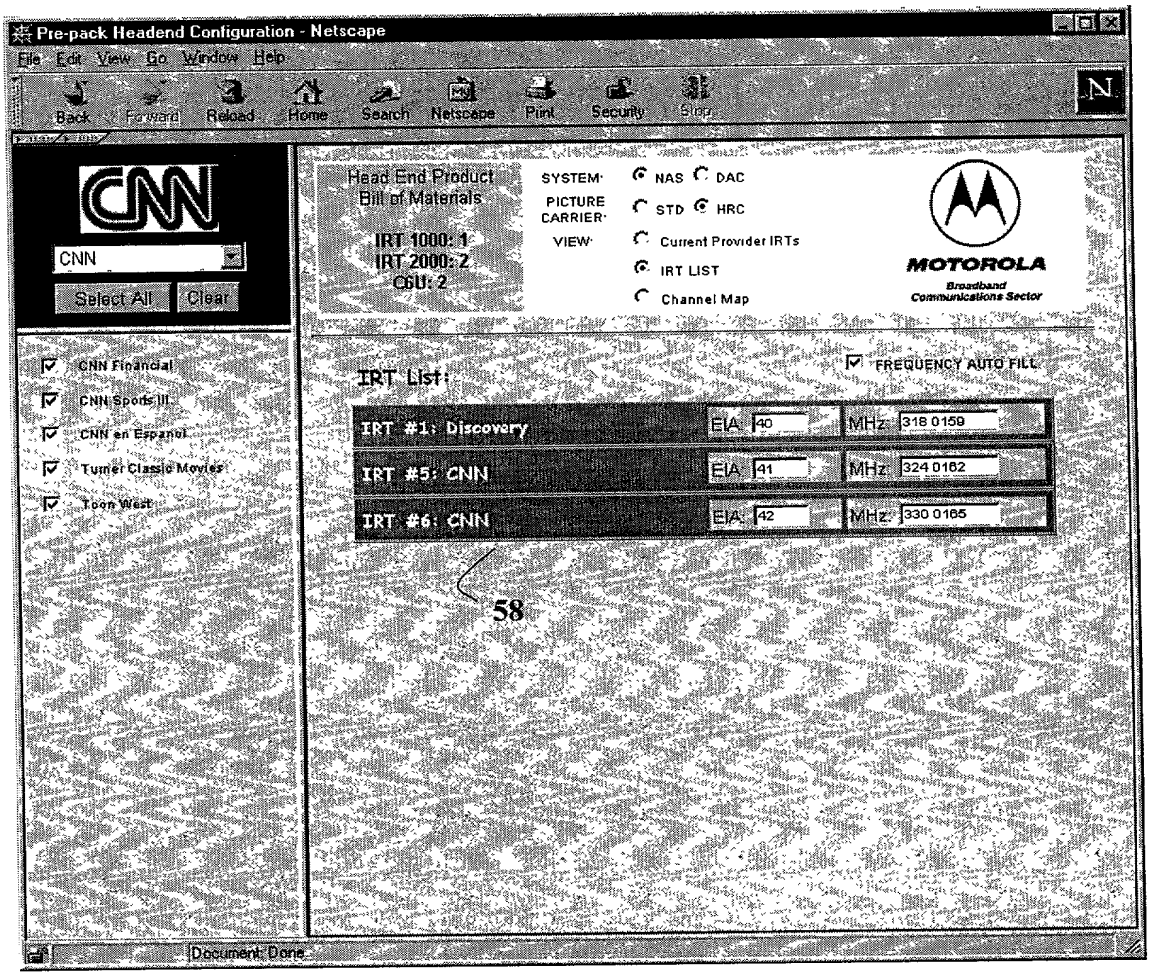
Pre-pack Headend Configuration - Netscape
File Edit View Go Window Help
Back Forward Reload Home Search Netscape Print Security Stop
CNN
CNN
Select All
Clear
CNN Financial
CNN Sports III
CNN en Espanol
Turner Classic Movies
Toon West
Head End Product Bill of Materials
IRT 1000: 1
IRT 2000: 2
CGU: 2
SYSTEM: NAS DAC
PICTURE CARRIER: STD HRC
VIEW: Current Provider IRTs
IRT LIST
Channel Map
MOTOROLA
Broadband Communications Sector
IRT List:
FREQUENCY AUTO FILL
IRT #1: Discovery EIA: 40 MHz: 318 0159
IRT #5: CNN EIA: 41 MHz: 324 0162
IRT #6: CNN EIA: 42 MHz: 330 0165
58
Document: Done

FIG. 4

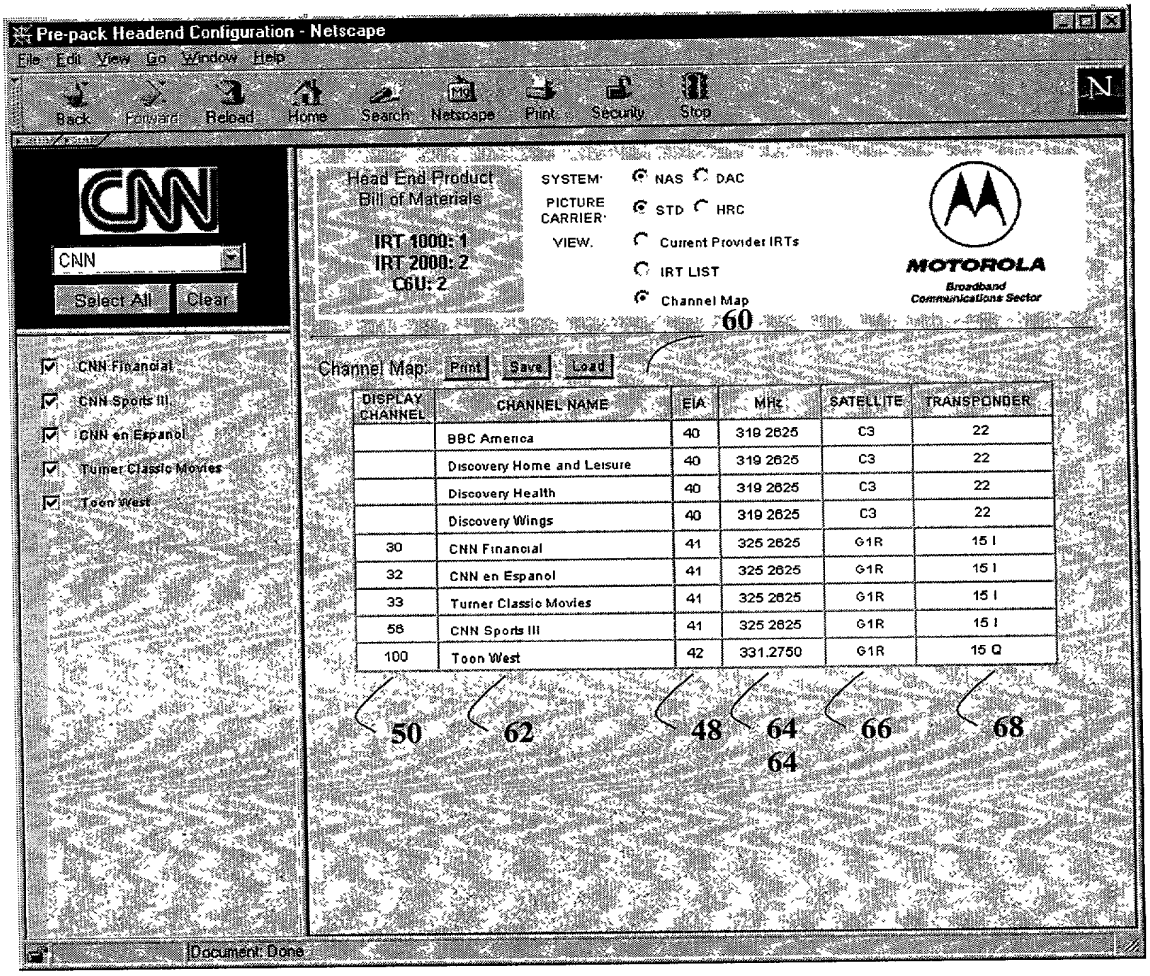
Pre-pack Headend Configuration - Netscape
File Edit View Go Window Help
Back Forward Reload Home Search Netscape Print Security Stop
CNN
CNN
Select All
Clear
CNN Financial
CNN Sports III
CNN en Espanol
Turner Classic Movies
Toon West
Head End Product Bill of Materials
IRT 1000: 1
IRT 2000: 2
C6U: 2
SYSTEM: NAS DAC
PICTURE CARRIER: STD HRC
VIEW.
Current Provider IRTs
IRT LIST
Channel Map
MOTOROLA
Broadband Communications Sector
60
Channel Map: Print Save Load
DISPLAY CHANNEL | CHANNEL NAME | EIA | MHz | SATELLITE | TRANSPONDER
BBC America | 40 | 319.2625 | C3 | 22
Discovery Home and Leisure | 40 | 319.2625 | C3 | 22
Discovery Health | 40 | 319.2625 | C3 | 22
Discovery Wings | 40 | 319.2625 | C3 | 22
30 | CNN Financial | 41 | 325.2625 | G1R | 15 I
32 | CNN en Espanol | 41 | 325.2625 | G1R | 15 I
33 | Turner Classic Movies | 41 | 325.2625 | G1R | 15 I
58 | CNN Sports III | 41 | 325.2625 | G1R | 15 I
100 | Toon West | 42 | 331.2750 | G1R | 15 Q
50
62
48
64
64
66
68
Document: Done

FIG. 5

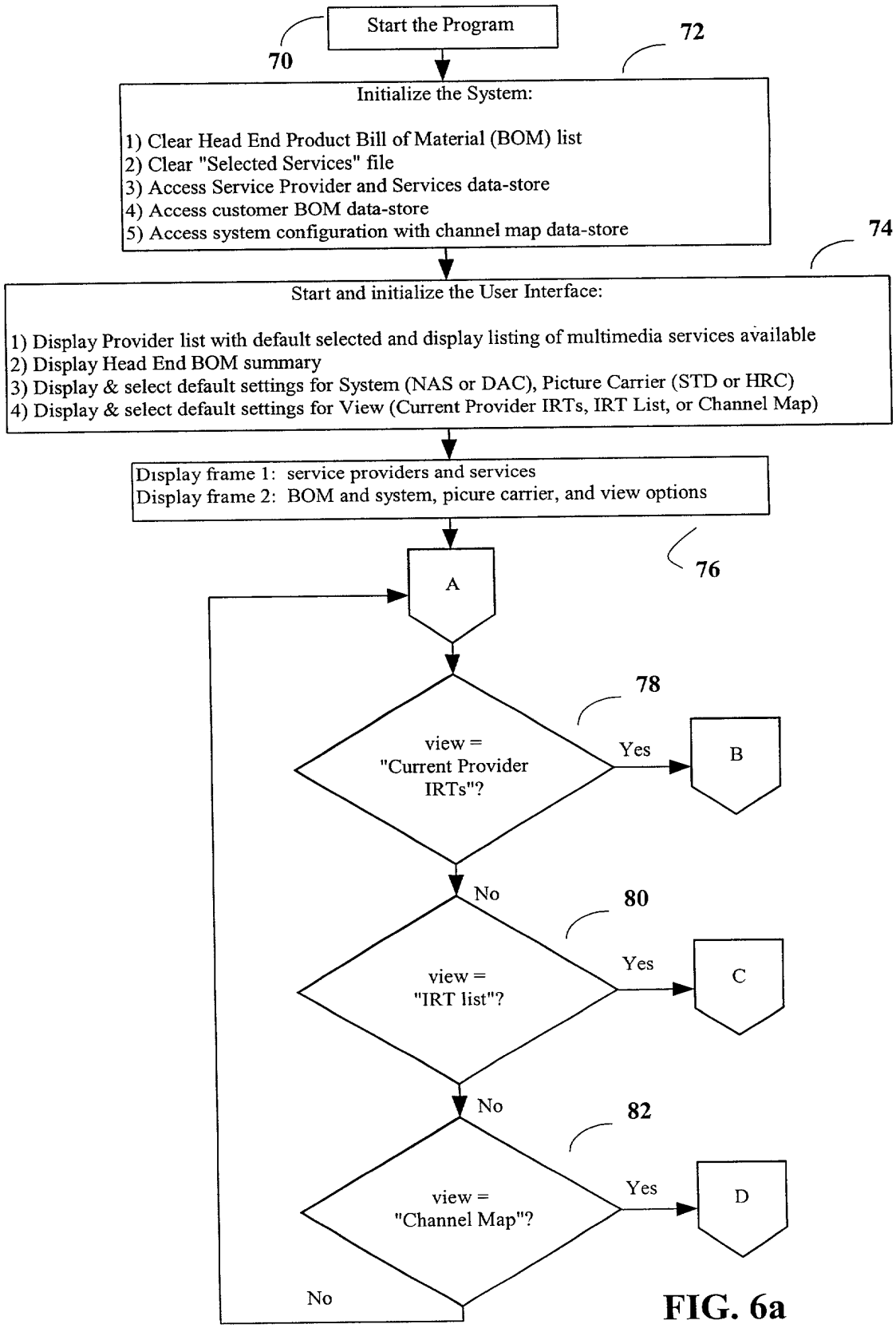
Start the Program
70
72
Initialize the System:
1) Clear Head End Product Bill of Material (BOM) list
2) Clear "Selected Services" file
3) Access Service Provider and Services data-store
4) Access customer BOM data-store
5) Access system configuration with channel map data-store
74
Start and initialize the User Interface:
1) Display Provider list with default selected and display listing of multimedia services available
2) Display Head End BOM summary
3) Display & select default settings for System (NAS or DAC), Picture Carrier (STD or HRC)
4) Display & select default settings for View (Current Provider IRTs, IRT List, or Channel Map)
Display frame 1: service providers and services
Display frame 2: BOM and system, picure carrier, and view options
76
A
78
view = "Current Provider IRTs"?
Yes
B
No
80
view = "IRT list"?
Yes
C
No
82
view = "Channel Map"?
Yes
D
No

FIG. 6a

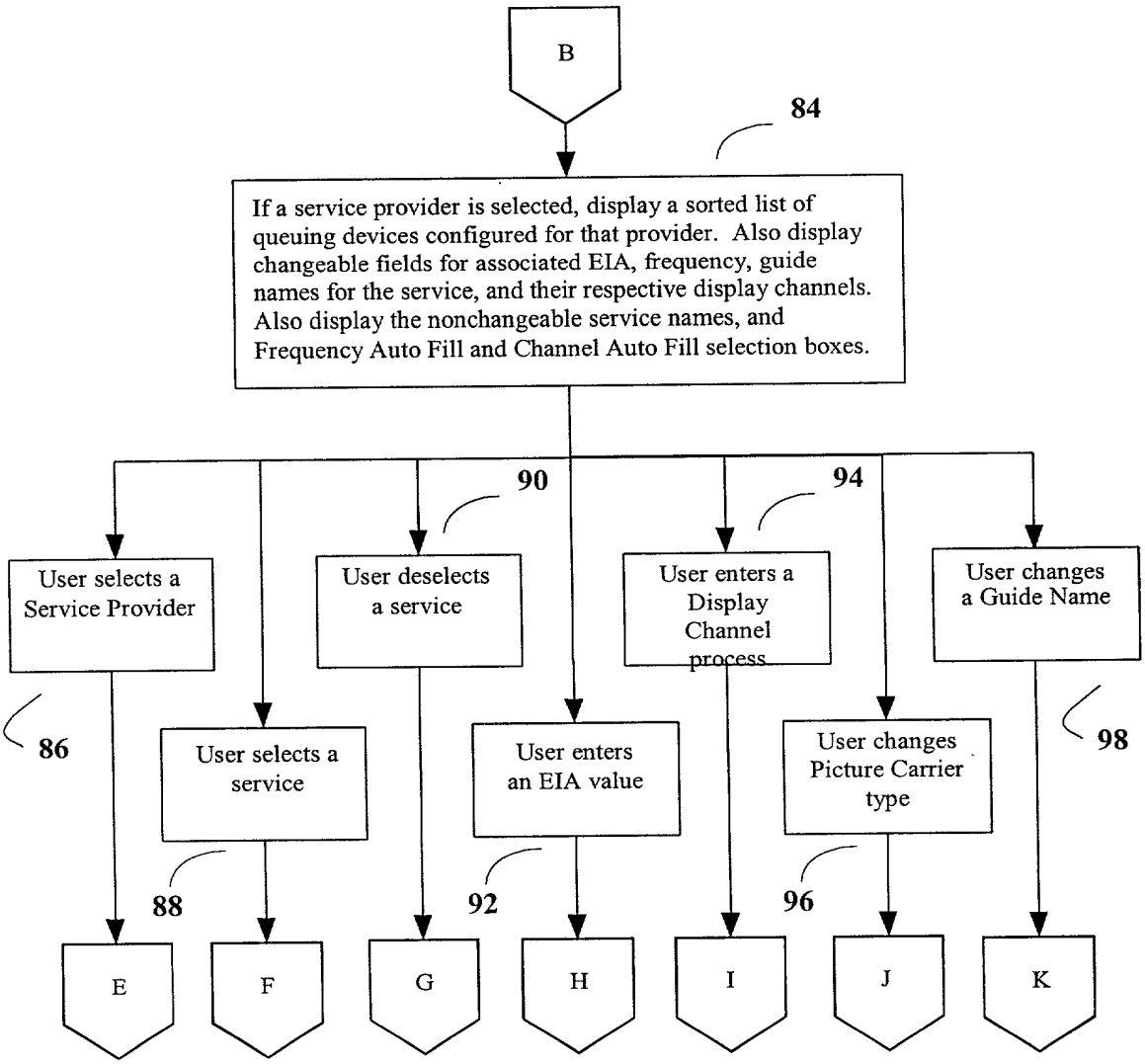
B
84
If a service provider is selected, display a sorted list of queuing devices configured for that provider. Also display changeable fields for associated EIA, frequency, guide names for the service, and their respective display channels. Also display the nonchangeable service names, and Frequency Auto Fill and Channel Auto Fill selection boxes.
90
94
User selects a Service Provider
User deselects a service
User enters a Display Channel process
User changes a Guide Name
86
98
User selects a service
User enters an EIA value
User changes Picture Carrier type
88
92
96
E
F
G
H
I
J
K

FIG. 6b

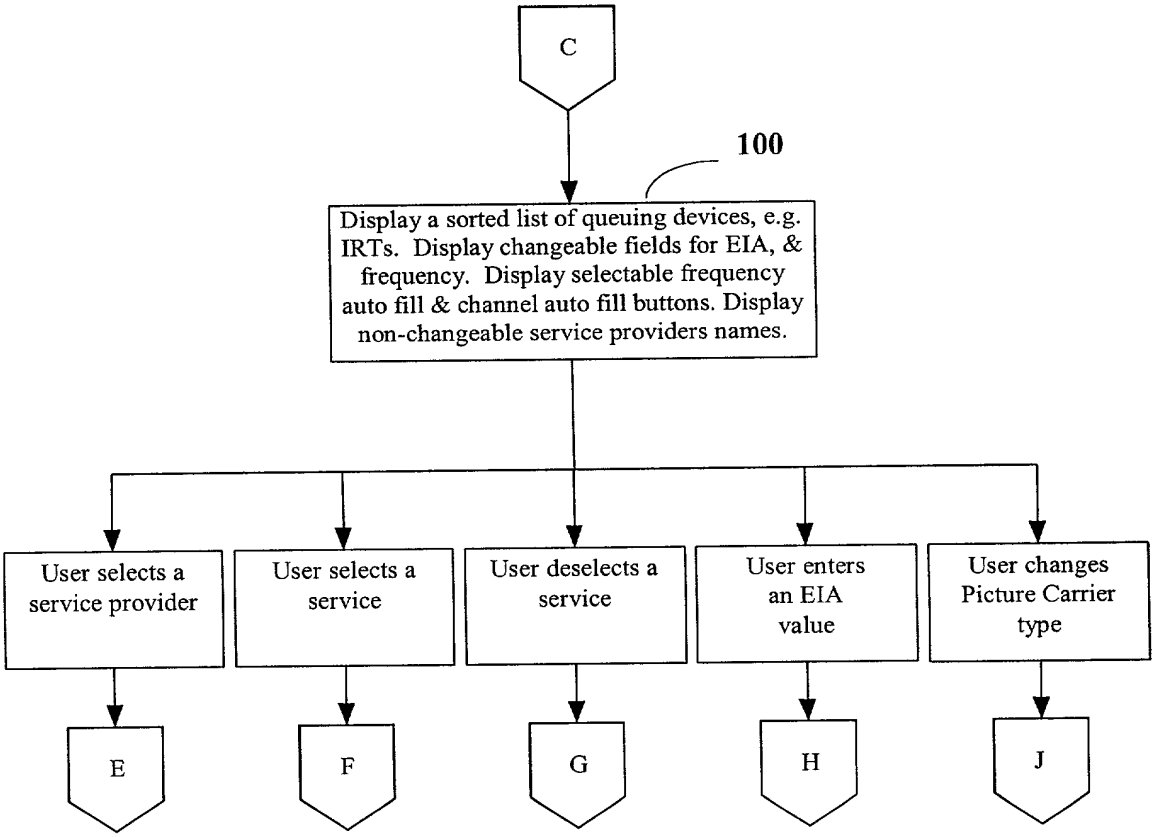
C
100
Display a sorted list of queuing devices, e.g. IRTs. Display changeable fields for EIA, & frequency. Display selectable frequency auto fill & channel auto fill buttons. Display non-changeable service providers names.
User selects a service provider
User selects a service
User deselects a service
User enters an EIA value
User changes Picture Carrier type
E
F
G
H
J

FIG. 6c

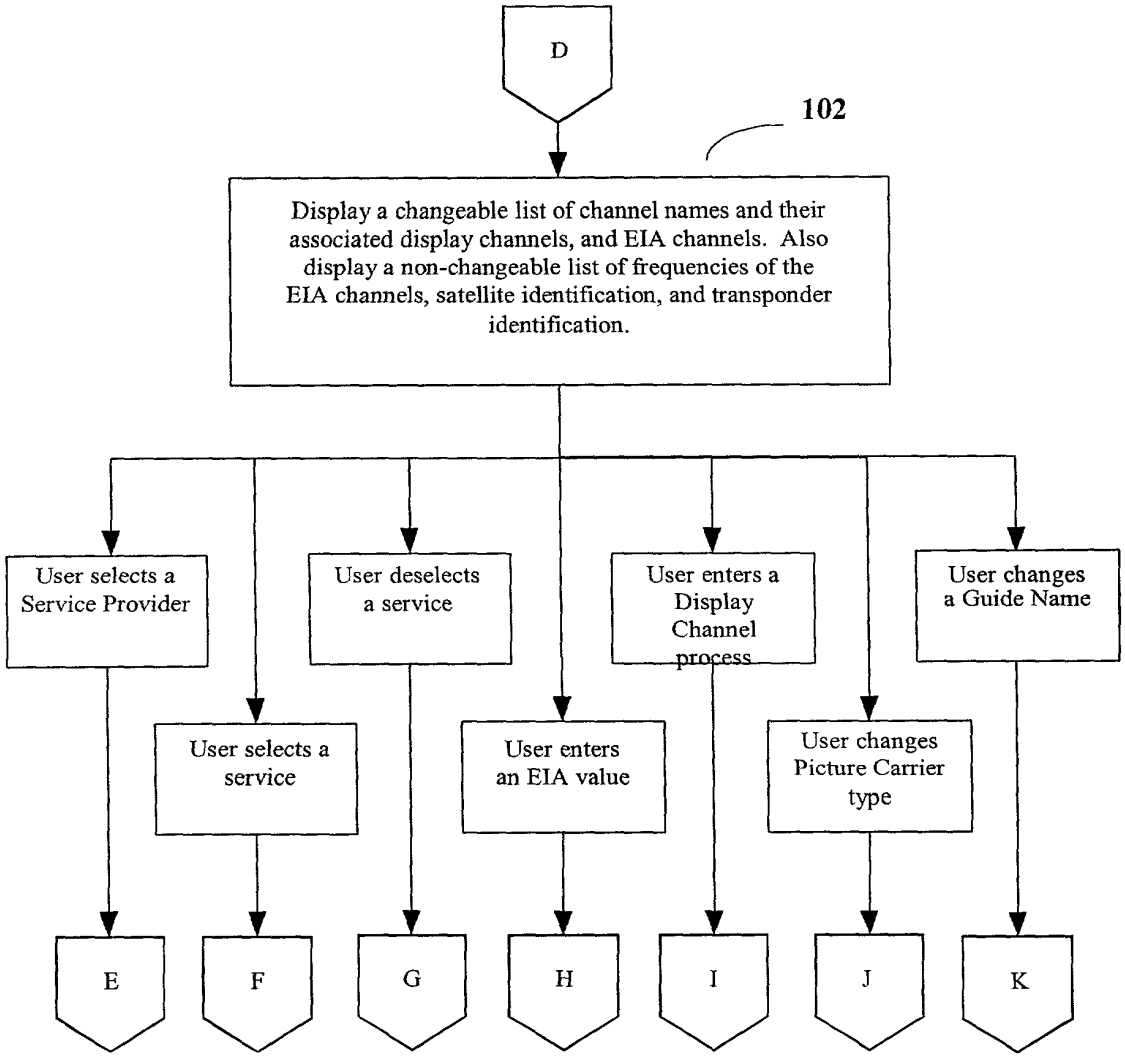
D
102
Display a changeable list of channel names and their associated display channels, and EIA channels. Also display a non-changeable list of frequencies of the EIA channels, satellite identification, and transponder identification.
User selects a Service Provider
User selects a service
User deselects a service
User enters an EIA value
User enters a Display Channel process
User changes Picture Carrier type
User changes a Guide Name
E
F
G
H
I
J
K

FIG. 6d

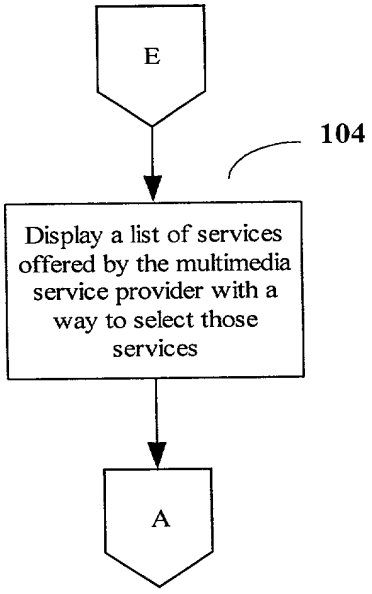
E
104
Display a list of services offered by the multimedia service provider with a way to select those services
A

FIG. 6e

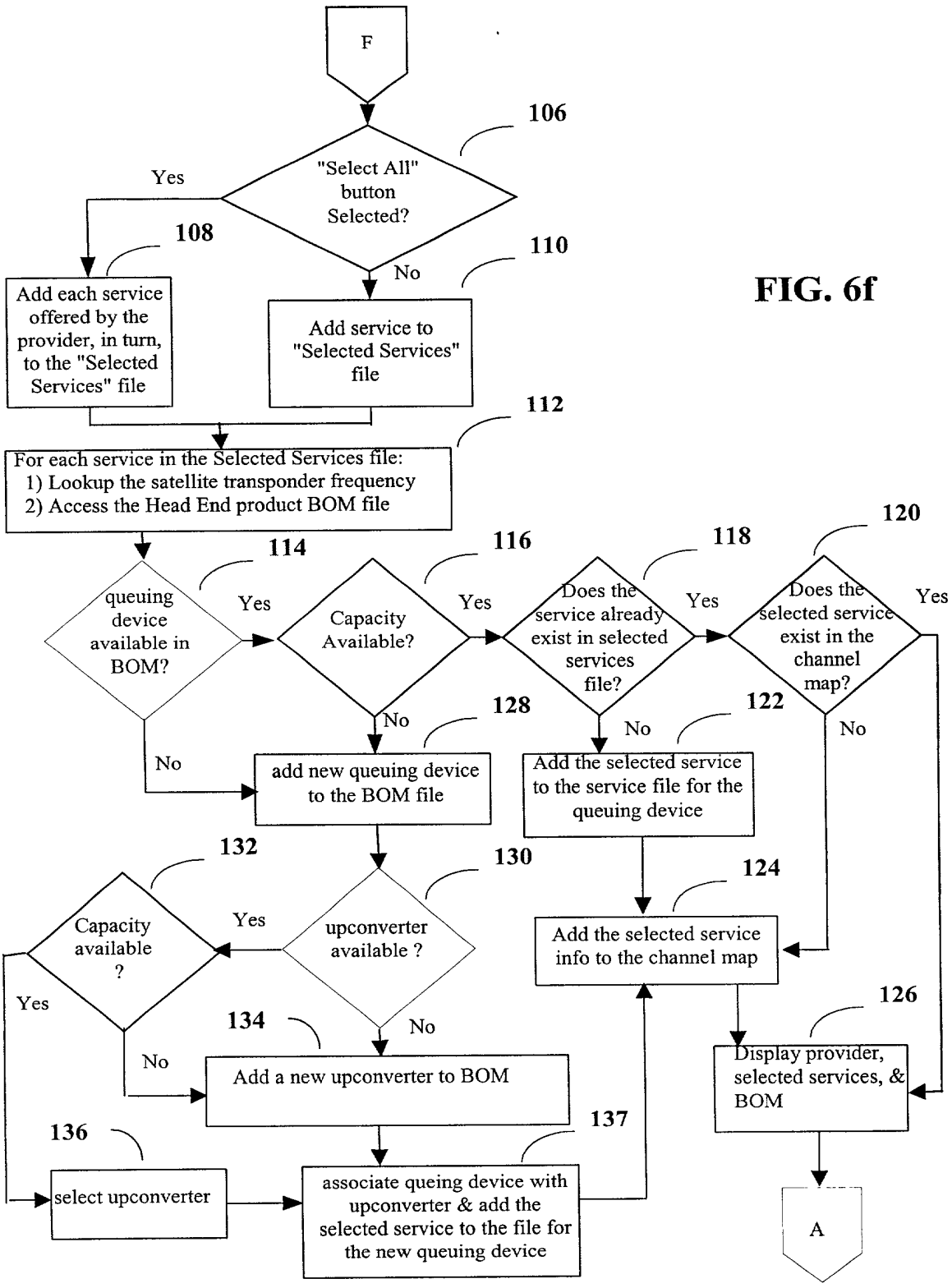
F
106
"Select All" button Selected?
Yes
No
108
Add each service offered by the provider, in turn, to the "Selected Services" file
110
Add service to "Selected Services" file
112
For each service in the Selected Services file:
1) Lookup the satellite transponder frequency
2) Access the Head End product BOM file
114
queuing device available in BOM?
Yes
No
116
Capacity Available?
Yes
No
118
Does the service already exist in selected services file?
Yes
No
120
Does the selected service exist in the channel map?
Yes
No
128
add new queuing device to the BOM file
122
Add the selected service to the service file for the queuing device
124
Add the selected service info to the channel map
126
Display provider, selected services, & BOM
A
130
upconverter available ?
Yes
No
132
Capacity available ?
Yes
No
134
Add a new upconverter to BOM
136
select upconverter
137
associate queing device with upconverter & add the selected service to the file for the new queuing device

FIG. 6f

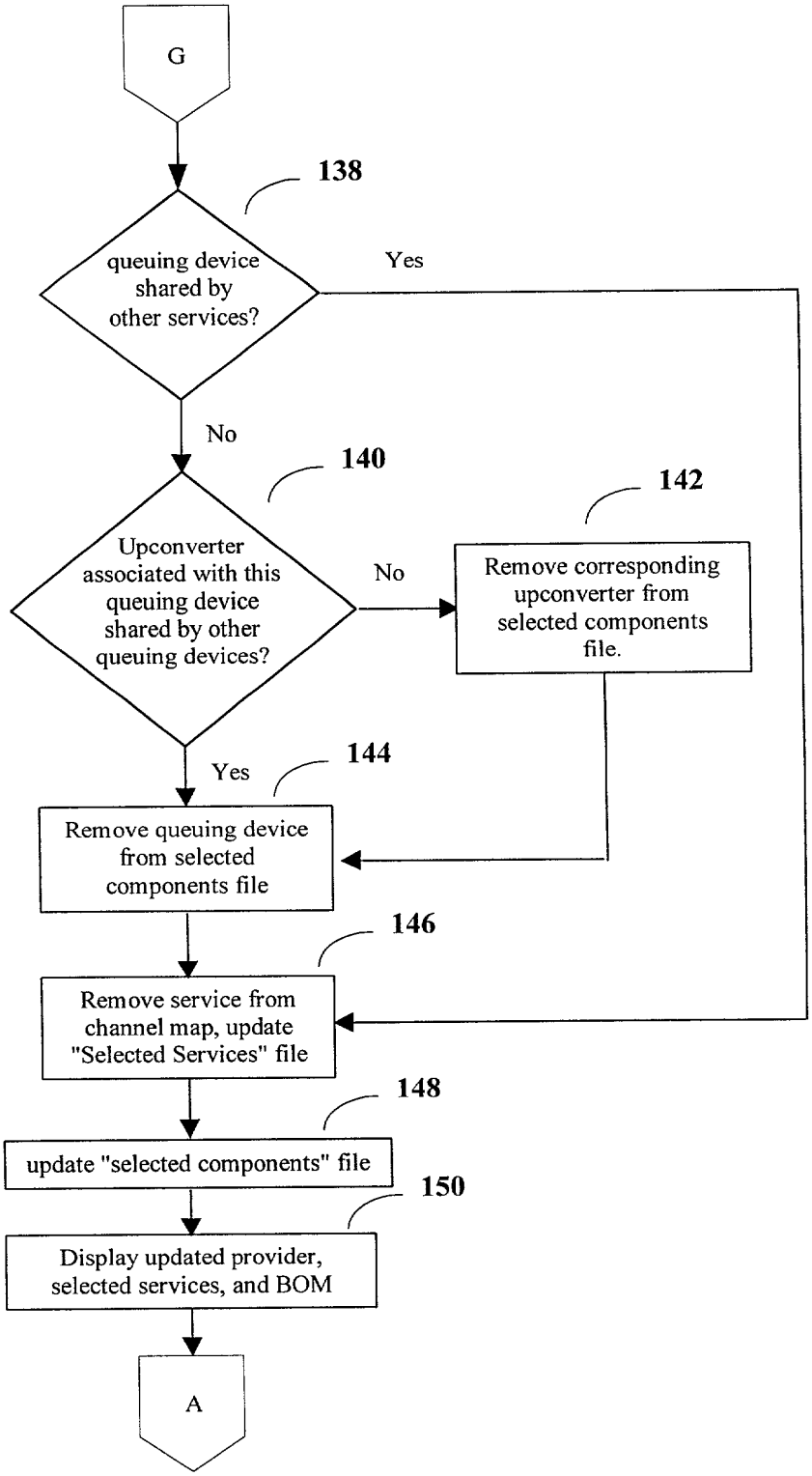
G
138
queuing device shared by other services?
Yes
No
140
Upconverter associated with this queuing device shared by other queuing devices?
No
142
Remove corresponding upconverter from selected components file.
Yes
144
Remove queuing device from selected components file
146
Remove service from channel map, update "Selected Services" file
148
update "selected components" file
150
Display updated provider, selected services, and BOM
A

FIG. 6g

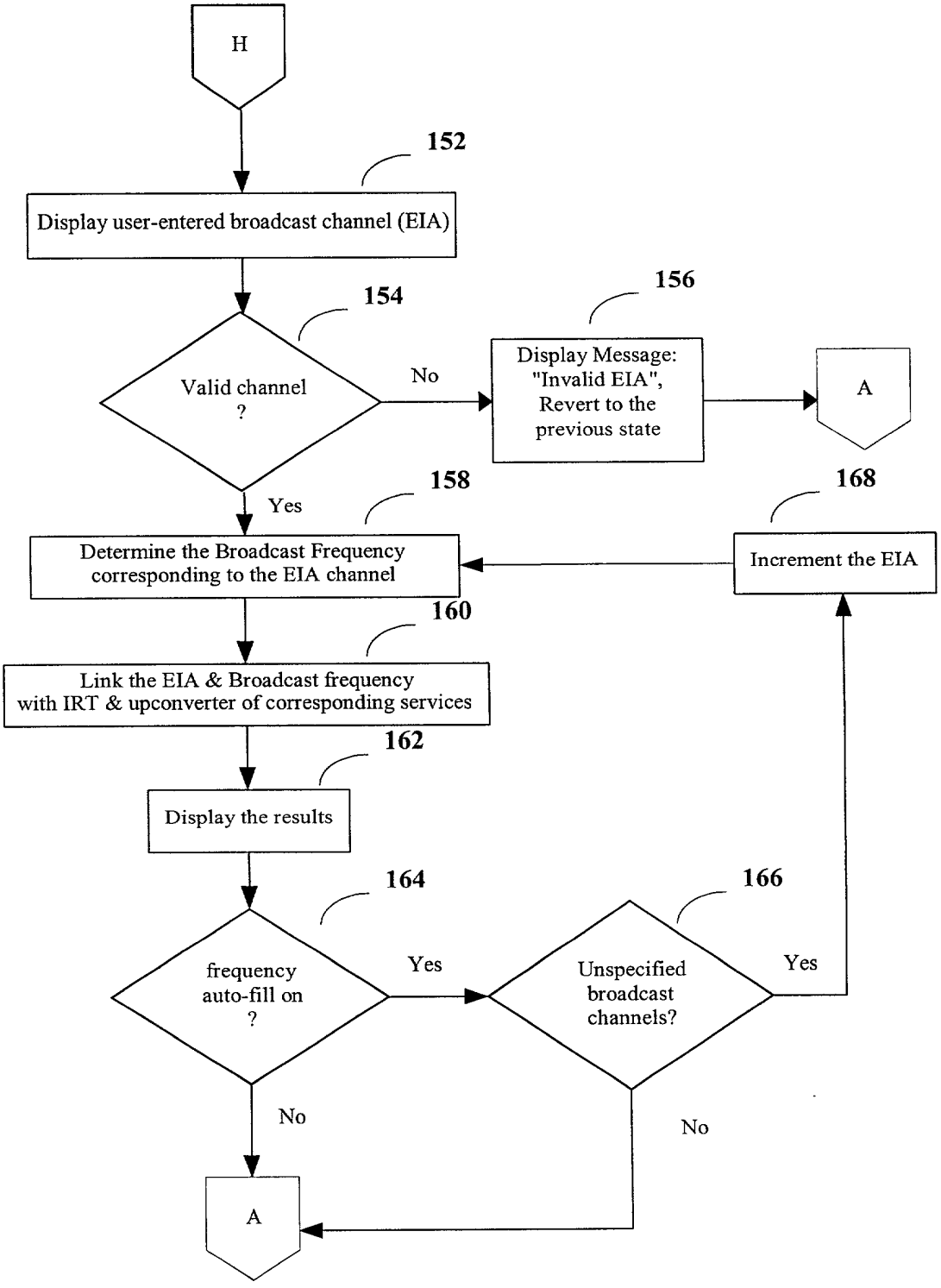
H
152
Display user-entered broadcast channel (EIA)
154
Valid channel ?
No
156
Display Message: "Invalid EIA", Revert to the previous state
A
Yes
158
Determine the Broadcast Frequency corresponding to the EIA channel
168
Increment the EIA
160
Link the EIA & Broadcast frequency with IRT & upconverter of corresponding services
162
Display the results
164
frequency auto-fill on ?
Yes
166
Unspecified broadcast channels?
Yes
No
No
A

FIG. 6h

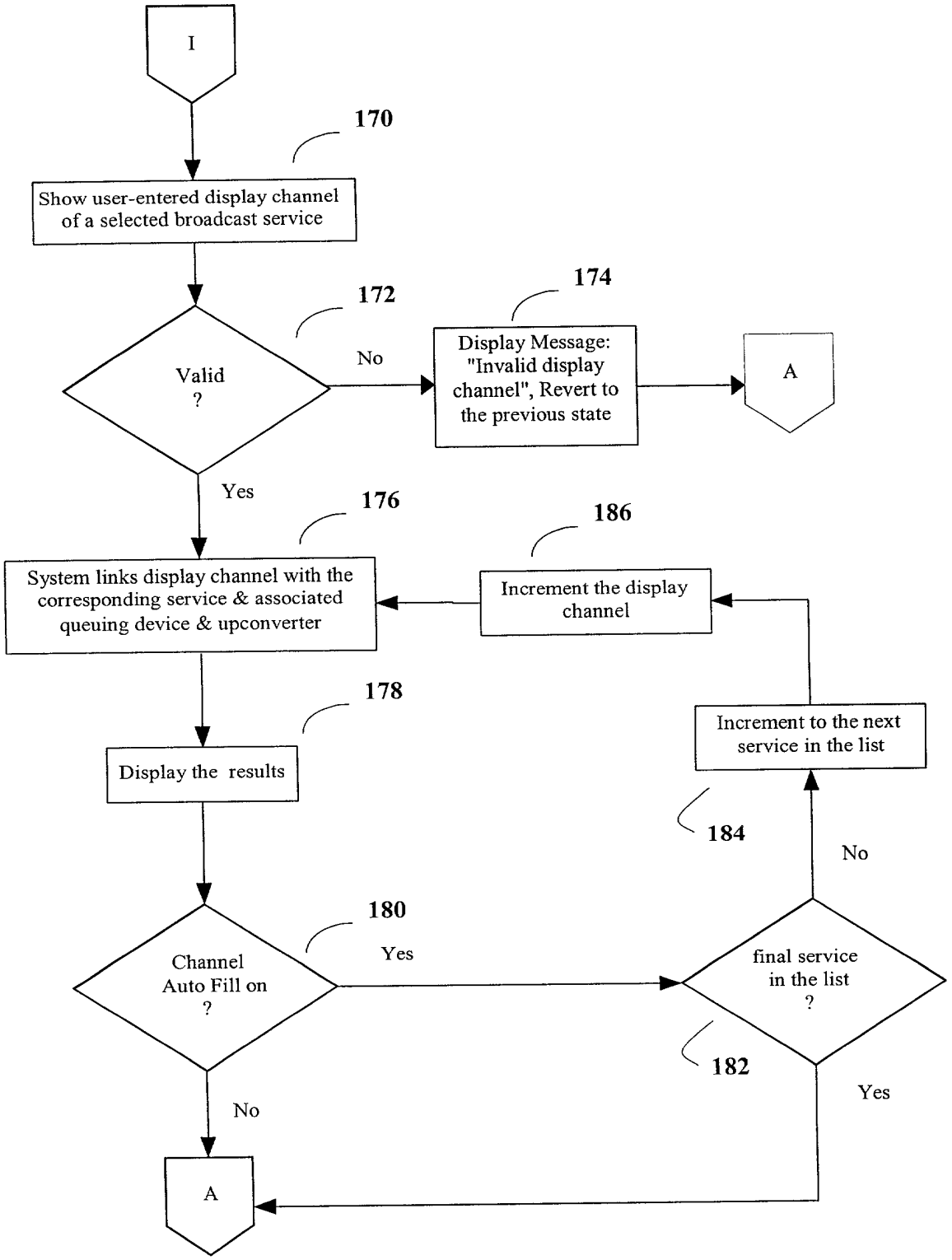
I
170
Show user-entered display channel of a selected broadcast service
172
Valid ?
No
174
Display Message: "Invalid display channel", Revert to the previous state
A
Yes
176
System links display channel with the corresponding service & associated queuing device & upconverter
186
Increment the display channel
178
Display the results
Increment to the next service in the list
184
No
180
Channel Auto Fill on ?
Yes
final service in the list ?
182
No
Yes
A

FIG. 6i

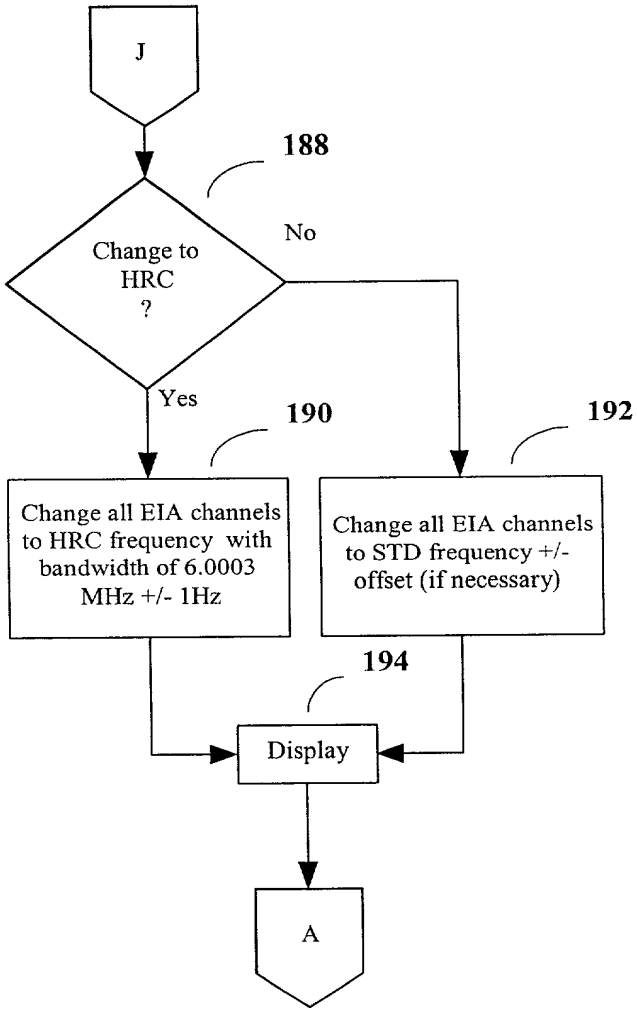
J
188
Change to HRC ?
No
Yes
190
192
Change all EIA channels to HRC frequency with bandwidth of 6.0003 MHz +/- 1Hz
Change all EIA channels to STD frequency +/- offset (if necessary)
194
Display
A

FIG. 6j

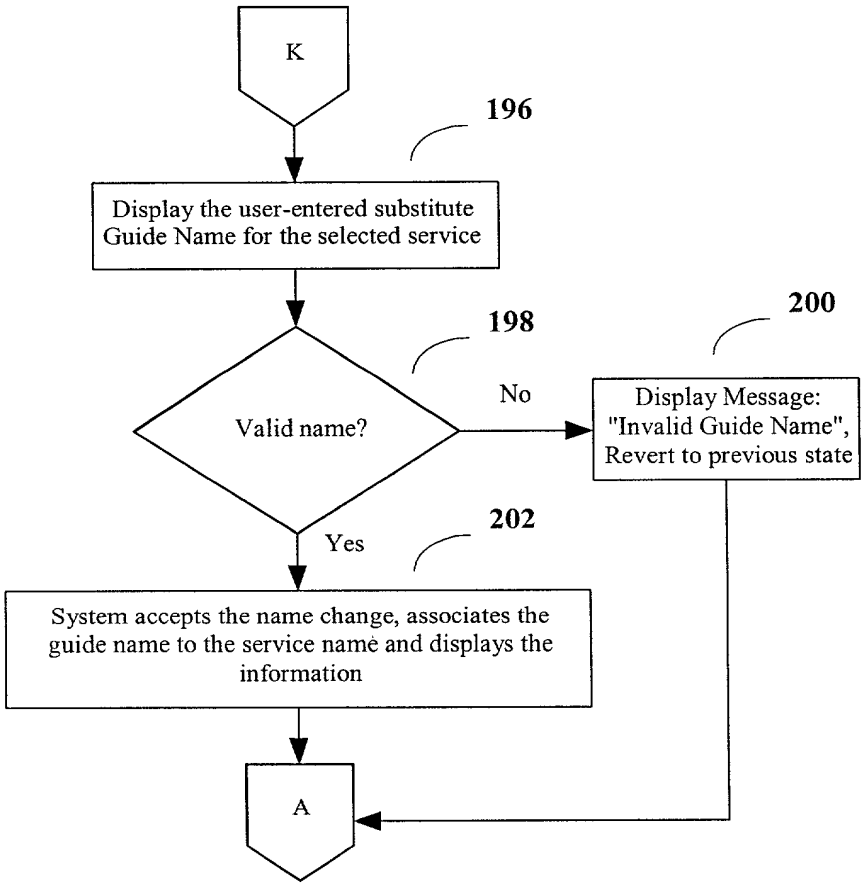
K
196
Display the user-entered substitute Guide Name for the selected service
198
200
Valid name?
No
Display Message: "Invalid Guide Name", Revert to previous state
Yes
202
System accepts the name change, associates the guide name to the service name and displays the information
A

FIG. 6k